REHABILITATION STUDY REPORT

State Project No. 63-703
Bridge No. 03244 in Hartford
I-91 over Drainage

Prepared For:

State of Connecticut
Department of Transportation
Newington, Connecticut

Submitted: February 2016

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Approved Repair Code	
Recommended Primary Repair Code	**K**

EXECUTIVE SUMMARY

Scope of Rehabilitation Work

Based upon the inspection and evaluation of Bridge No. 03244, we recommend Alternate 1 consisting of the following:

- Modifying east embankment slope.
- Patching the existing culvert and wingwalls.

Reasons for the recommended rehabilitation work:

- The I-91/I-84 Interchange and Charter Oak Bridge Project requires widening of the northbound roadway above.
- The existing structure has deterioration that will be addressed and repaired to extend the service life of the bridge.

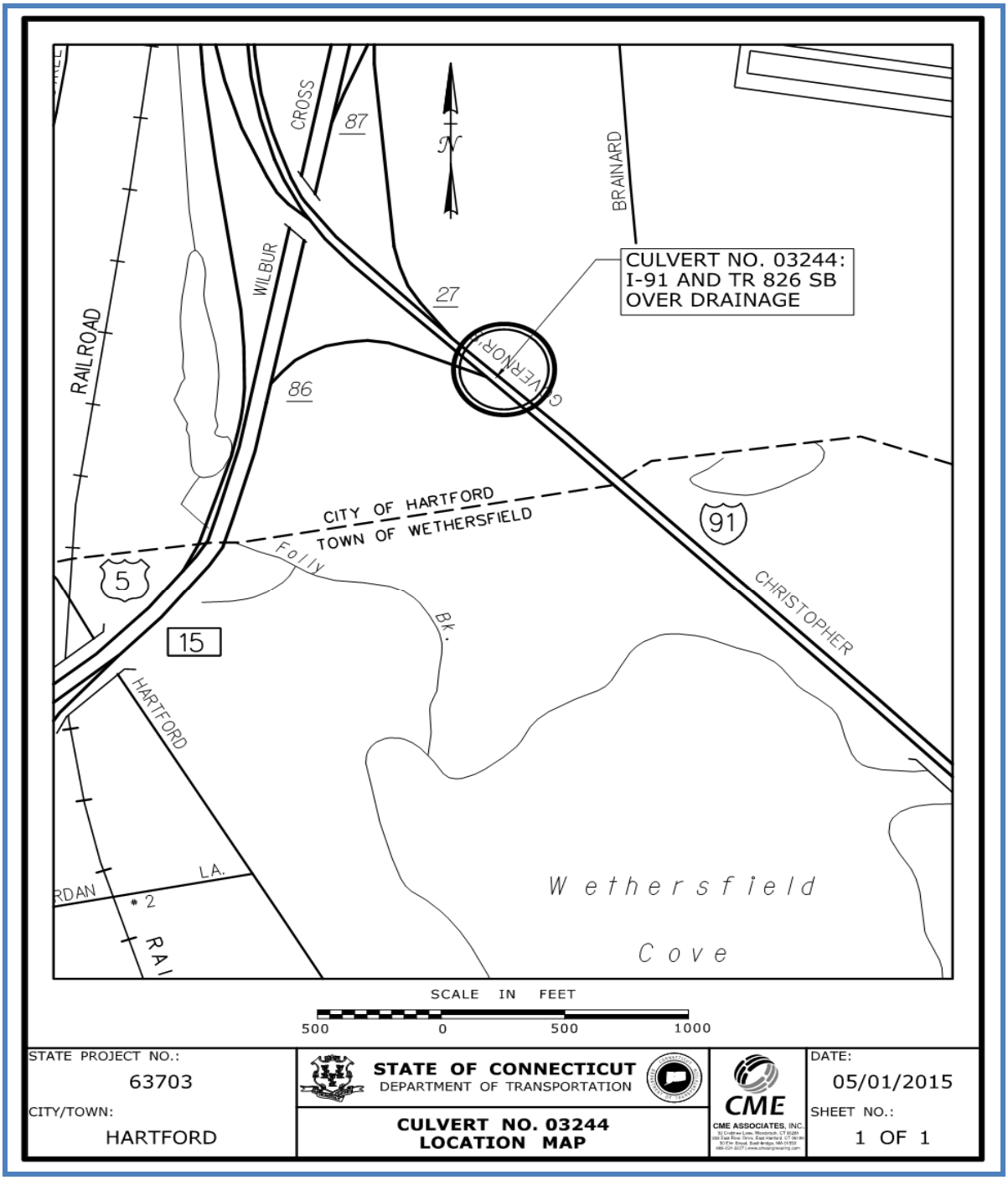
Maintenance and Protection of Traffic

Maintenance and Protection of Traffic on I-91 for the rehabilitation required at this location will be part of a project wide traffic staging and control. The work outlined in this report will be performed when the I-91 NB corridor is widened and the duration of the traffic staging will take into account the selected rehabilitation.

Notable Facts

Estimated Construction Cost:	$ 205,000
ROW Involvement:	None Anticipated
Utilities Impacted:	None Anticipated
Potential Design Exceptions:	None Anticipated
Sufficiency Rating:	77.6 (Per 2013 ConnDOT Inspection Report)
Load Rating after Repairs:	HS-20
Estimated 2012 ADT:	127,000

LOCATION MAP



INTRODUCTION

CME Associates, Inc. has been retained by the Connecticut Department of Transportation (ConnDOT) to perform the rehabilitation evaluation for this bridge as part of State Project 63-703, I-91/I-84 Interchange and Charter Oak Bridge. Field inspections were conducted during April 2015.

This report describes the findings of the comprehensive evaluation of this bridge and presents our recommendations for rehabilitation to ensure its structural and functional adequacy, as well as extend its service life.

DESCRIPTION

General

The I-91/I-84 Interchange and Charter Oak Bridge Project includes widening I-91 northbound south of the Charter Oak Bridge. This widening impacts eight structures, including culverts and bridges. Bridge No. 03244 will be widened approximately 16'-3" to accommodate an additional 12' lane in the northbound direction with an increased shoulder width. The right shoulder at this location is adjacent to a northbound deceleration lane.

Bridge No. 03244 is a 314.5' long reinforced concrete box culvert that carries I-91 SB and Turning Ramp 826 over drainage in the city of Hartford. The bridge was originally constructed in 1964 and consists of an 8'-6" x 6'-0" box culvert below approximately 39' of fill. There are reinforced concrete headwalls and wingwalls at both sides of the culvert.

On Interstate 91 (I-91) there are metal beam rails along the right shoulders with a reinforced concrete median barrier between bounds. I-91 was rehabilitated in 1992. The rehabilitation work included removing median metal beam rail, installing a new concrete median barrier, and replacing metal beam rails along right shoulders on the northbound and southbound roadways. The roadway above the bridge has a minimum curb-to-curb width of 67' for I-91 northbound and 67' for I-91 southbound.

Highway Geometrics

I-91 Northbound and Southbound

I-91 is classified as an Urban Interstate according to the ConnDOT Highway Log and an Urban Principal Arterial-Interstate according to the functional classification maps, but in Connecticut, all Interstates are considered Freeways, despite their functional classification. The bridge is on the National Highway System (NHS) and is part of the Strategic Highway Network (STRAHNET). I-91 northbound has a posted speed limit of 55 mph approximately 0.2 miles before and approximately 0.2 miles after the bridge. I-91 southbound has a posted speed limit of 55 mph approximately 0.7 miles before and approximately 0.2 miles after the bridge. The design speed for an Urban Freeway in a built-up area ranges from 50-55 mph, according to the ConnDOT Highway Design Manual.

Bridge No. 03244 is a culvert that passes under I-91 with no skew angle. I-91 northbound is located within horizontal tangent and a 300' crest vertical curve. I-91 southbound is located within a 2900.00' radius curve that begins 67' before the bridge and a 300' crest vertical curve. The southbound on ramp is located within a 4820.00' radius horizontal curve and a 160' long crest vertical curve. The roadway has a cross slope that varies in travel lanes and is 1/2" per foot in shoulders.

The curb-to-curb roadway width of this bridge is 67' for I-91 northbound and 67' for I-91 southbound, which is consistent with the approach roadway width. Based on the Federal Highway Administration (FHWA) Coding Manual, the minimum curb-to-curb width for four lanes of traffic to avoid functional obsolescence is 56' in the northbound direction and 56' in the southbound direction. Current ConnDOT Multi-Lane Principal Urban Arterial-Interstate design criteria specify a minimum paved width of 54' in the northbound direction and 54' in the southbound direction, comprised of 12' lanes with 2' to 4' left shoulder and 4' to 8' right shoulder. Again, Connecticut considers all interstates Freeways, despite their functional classification. Accordingly, current ConnDOT Urban Freeway design criteria (where truck volumes exceed 250 DDHV) specifies a minimum northbound paved width of 72' and a minimum southbound paved width of 72', comprised of 12' lanes with 12' left and right shoulders; therefore, the curb-to-curb width meets the FHWA Coding Manual criteria and ConnDOT Urban Principal Arterial-Interstate design standards, but does not meet ConnDOT Urban Freeway design standards.

Considering the NBIS appraisal rating for structural evaluation is a "7", waterway adequacy is a "7", and approach roadway alignment is an "8", Bridge No. 03244 is not considered functionally obsolete.

Traffic

According to the most recent inspection report, dated July 11, 2013, the estimated 2012 Average Daily Traffic (ADT) on the bridge is approximately 127,000 vehicles with 9% truck traffic.

FIELD OBSERVATIONS

The NBIS condition rating for Item 61, channel and channel protection was found to be in good condition (rating = 7), and Item 62, culverts was found to be in good condition (rating = 7); therefore the bridge is not considered structurally deficient.

Pavement

In the travel lanes there is a 5.5" bituminous concrete, 9" reinforced concrete pavement, and a 6" subbase. In the right shoulders there is 6.5" of processed aggregate based and in the left shoulders there is 12" bituminous concrete with 10" of processed aggregate. There is a precast concrete median barrier between northbound and southbound.

The bituminous concrete is in satisfactory condition (rating = 6) and exhibits the following:

- Transverse and longitudinal cracks
- Traffic worn wheel paths
- Rutting along longitudinal paving seams
- Concrete patches with adjacent short cracking along seams

The reinforced concrete median barrier is in good condition (rating = 7) and exhibits scrapes, small surface spalls, and vegetation growth on top.

Channel and Channel Protection

Water flows through the culvert from east to west.

Channel scour is considered very good condition (rating = 8) based on 2013 Inspection Report but CME suggests it is in good condition (rating = 7) based on minor scour just beyond concrete apron at the outlet up to 2' deep. The pipe is carrying dirty stagnant surface drainage water.

There is minor debris with encroachment at the east outlet. There is also silt buildup in the middle of the box about halfway through approximately 10 inches deep.

There is heavy vegetation growth along channel embankments with heavy growth at both ends of the culvert overhanging headwalls.

Culvert

The culvert is an 8'-6" x 6'-0" reinforced concrete box culvert below approximately 39' of fill. The culvert consists of a 1' high stub headwall, 11' long wingwalls, and a 4' high cutoff wall which is not visible.

The concrete is in good condition (rating = 7) which exhibits the following:

- Light honey combing throughout
- Light hairline map cracking and a few popouts from shallow steel at the roof
- Vertical hairline cracks and light to medium scale at the waterline on the walls
- Minor misalignment up to 1/2" of some culvert sections
- There is missing joint filler between culvert units
- Gaps between south panels up to 2-1/2" wide

The reinforced concrete headwalls are in good condition (rating = 7) and exhibit popouts from shallow steel and vines overhanging the inlet and outlet which prevents visibility.

The retaining wall stem is in good condition (rating = 7) and exhibits heavy scale at the waterline of the northwest wingwall and others showing light scale.

Approaches

There is metal beam rail along I-91 northbound and southbound right shoulders.

The metal beam approach guiderail (Type R-I) is in good condition (rating = 7) but is supported by weak posts and exhibits one section of dented rail and one post disconnected.

The approach pavement is in satisfactory condition (rating = 6) and is in the same condition as overlay described above.

The approach embankment is in good condition (rating = 7) and exhibits heavy vegetation.

Utilities

There are overhead wires that span east-west with support towers located near the inlet and outlet of culvert. There is a buried fiber optic cable on the west embankment. Impacts to these utilities are not anticipated.

Property

Considering the width of the existing right-of-way, approximately 650' east from center of I-91, takings or easements are not anticipated. Noise impacts to commercial and private property owners in the immediate vicinity surrounding the bridge are anticipated to be minimal and the noise level is not anticipated to exceed ambient noise generated by current highway traffic.

Cultural Resources

Developed commercial areas are present to the north of the bridge. Brainard Airport is approximately 0.5 miles to the northeast. To the west approximately 0.3 miles, the Providence & Worcester Railroad provides freight service to the Wethersfield Secondary.

Environmental Resources

The Connecticut River is located approximately 0.6 miles east of the bridge with access at Charter Oak Landing approximately 1.7 miles to the north. Wethersfield Cove is approximately 0.26 miles to the south.

HYDRAULICS

The preliminary estimated drainage area for this structure is less than 1 square mile, therefore a hydraulic analysis of the structure will not be required.

SCOUR

The channel scour was rated very good (rating = 8) based on 2013 inspection report but CME suggests it is in good condition (rating = 7) due to scour just beyond concrete up to 2' deep at outlet. There is a 4' high curtain wall which inhibits scour below the apron.

LOAD RATING

The existing bridge is not posted for live load restriction. No independent load rating analyses were performed. In addition, ConnDOT's latest inspection report dated June 11, 2014 denotes that no rating analysis was performed; however, the report lists values for Item 64, Operating Rating and Item 66 Inventory rating as follows:

- Inventory Rating 99.0 Tons
- Operating Rating 99.0 Tons

Additionally, Items 63 and 65 in the latest inspect report denote that no rating analysis was performed. The load rating may be based on judgment since the existing culvert structure is below approximately 39' of fill resulting in minimal contribution from live load effects.

SEISMIC CONSIDERATIONS

According to AASHTO LRFD Bridge Design Specifications in Section 3.10 Earthquake Effects, seismic effects for buried structures need not be considered, except where they cross active faults. Connecticut does not cross any active fault lines; however, AASHTO states that the potential for soil liquefaction and slope movements shall be considered for these structures.

REHABILITATION ALTERNATIVES

Based on field inspections, engineering analysis, and a review of ConnDOT's Bridge Inspection Reports, Bridge No. 03244 was found not to be structurally deficient or functionally obsolete. CME has evaluated three possible rehabilitation options to ensure its structural and functional adequacy, extend its service life, and accommodate an additional northbound lane as part of the I-91 corridor project.

Cost Considerations

Appendix B contains an itemized cost estimate for all of the alternatives. The table below provides a summary of the total costs.

Rehabilitation Alternates	Cost of Bridge Only	Additional Costs	Rounded Total Costs
1 – Modify the Existing Embankment Slope and Structure Repairs	$ 118,000	$ 87,000	$ 205,000
2 – Remove Existing Headwall, Construct New Headwall, and Structure Repairs	$ 193,000	$ 143,000	$ 336,000
3 – Lengthen Culvert, Construct New Stub Headwall, and Structure Repairs	$ 183,000	$ 135,000	$ 318,000

Additional Costs – Breakdown	Alternate 1	Alternate 2	Alternate 3
Clearing and Grubbing	$ 2,000	$ 3,200	$ 3,100
Maintenance and Protection of Traffic	$ 700	$ 2,200	$ 2,100
Mobilization	$ 9,800	$ 16,000	$ 15,100
Construction Staking	$ 1,300	$ 2,200	$ 2,100
Minor Items	$ 11,800	$ 19,300	$ 18,300
Incidentals and Contingencies	$ 43,200	$ 70,800	$ 67,200
Escalation to Year of Construction	$ 17,400	$ 28,500	$ 27,000
Rounded Total Additional Costs:	**$ 87,000**	**$ 143,000**	**$ 135,000**

Alternate 1 – Steepen Embankment Slope

This alternative consists of modifying the east embankment slope due to widening of the roadway while maintaining a slope between 1.5 to 1 and existing 2 to 1, and patching the existing culvert and wingwalls. These structural repairs are estimated to extend the service life of Bridge No. 03244 approximately 25 years at which time the culvert will likely need rehabilitation.

Advantages Alternate 1	Disadvantages Alternate 1
+ No work to culvert or waterway required.	– A slope of 2 to 1 cannot be achieved, however at slope between 1.5 to 1 and existing 2 to 1 can using modified rock fill or similar type of slope protection.
+ Cost is less than other alternates.	– Compressive soils should be checked with added fill on culvert
+ Less fill added than other alternates	

Alternate 2 – Add Headwall

This alternative consists of removing the existing stub headwall, constructing a new taller and wider headwall to retain the additional soil due to widening the roadway and maintaining a 2 to 1 slope, and patching the existing culvert and wingwalls. The headwall will extend beyond the limits of the existing structure supported on spread footings. These structural repairs are estimated to extend the service life of Bridge No. 03244 approximately 25 years at which time the culvert will likely need rehabilitation.

Advantages Alternate 2	Disadvantages Alternate 2
+ No work to the waterway required	– Temporary Earth Retaining System may be necessary to retain the existing embankment and allow construction of the headwall and spread footings outside the limits of the existing culvert.
	– Cost is more than Alternate 1 and 3
	– Retaining wall would have to extend beyond the culvert to maintain soil behind wingwalls and right of way
	– Compressive soils should be checked with added fill on culvert
	– More fill added than Alternate 1

Alternate 3 – Extend Culvert

This alternative consists of lengthening the culvert approximately 13 feet, constructing new wingwalls, adding a new stub headwall, patching the existing culvert, and temporarily diverting the drainage channel. Lengthening the culvert will require excavation of the channel for the installation of new culvert sections. These structural repairs are estimated to extend the service life of Bridge No. 03244 approximately 25 years at which time the culvert will likely need rehabilitation.

Advantages Alternate 3	Disadvantages Alternate 3
+ Cost is less than Alternate 2	– Temporary Earth Retaining System may be necessary for retaining the existing embankment.
+ An embankment slope of 2 to 1 can be maintained	– The drainage channel at the east end of the culvert must be excavated to allow additional culvert sections to be installed to lengthen the culvert.
	– Need to temporarily diverge drainage channel.
	– Additional environmental impacts would affect the permit
	– Extended culvert passes right of way limits

RECOMMENDATIONS FOR REHABILITATION

Based on work performed to date and the observations in the field, we recommend Alternate 1 as the preferred alternative for the rehabilitation of Bridge No. 03244. It is the lowest cost alternate and addresses the scope of widening I-91 NB and repairs the deterioration of the existing structure.

APPENDICES

Appendix A – Photographs
Appendix B – Cost Comparisons
Appendix C – Existing Bridge Plans
Appendix D – Proposed Bridge Plans
Appendix E – Concrete Deterioration Quantities
Appendix F – ConnDOT Inspection and Maintenance Reports

Appendix A: Photographs

West Elevation of Bridge No. 03244

East Elevation of Bridge No. 03244

Looking West from West Outlet

Looking East from East Inlet

Bridge from North Approach (Note: I-91 Southbound)

North Approach from Bridge (Note: I-91 Southbound)

Northwest Wingwall

Southwest Wingwall

West Inlet

Apron at West End

Culvert Bottom at West End

West Header

Looking East Through Culvert from West End

Panel 11 North Wall

Top Panel 10 (Note: Spalls with exposed rusted reinforcement)

Spall at Top Panel 10 (Note: Exposed rusted reinforcement)

North Abutment Elevation Joint at South Wall between Panels 9 and 10

North Wall Panel 9 (Note: Scale at waterline)

Top Panel 8 (Note: Scaling and heavy efflorescence)

Typical 4" Weep Hole at North Panel 6

Joint 5 at South Panel (Note: Up to 2.5" wide gap between panels)

Joint 2 Top Panel (Note: Typical misalignment up to ½")

Top Panel 1 East End

Southeast Wingwall

Northeast Wingwall

East Inlet

Apron at East End

East Header

Light Pole at Northwest Corner

Tower at East Inlet

West End Looking West from Roadway

Looking North from West Outlet

Looking North at East Inlet

Looking South at East Inlet

East Embankment

Appendix B: Cost Comparisons

CME	COMPUTATION BY: JLS	DATE: 5/20/15	SHEET: 1	OF: 1
	CHECKED BY: TEG	DATE: 5/20/15	CME PROJECT NO.	
	CLIENT: Charter Oak Bridge Project		CLIENT PROJECT NO.: 063-0703	

ITEM
Bridge # 03244 Alternate 1 - Steepen Embankment Slope

Alternate 1: Steepen Embankment Slope

1. Steepen Slope of Northbound Embankment
2. Patch the existing culvert and wingwalls

STRUCTURE ITEMS

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
0213100	GRANULAR FILL	CY	70	$33.20	$3,000
0520907	REPLACE JOINT SEAL	LF	80	$52.40	$5,000
0601070	CLASS "S" CONCRETE	CY	10	$9,546.20	$96,000
0602000	DEFORMED STEEL BARS	LB	1,200	$1.20	$2,000
0728001	CRUSHED STONE FOR SLOPE PROTECTION	TON	126	$58.20	$8,000
0913014	5' CHAIN LINK FENCE (BRIDGE)	LF	40	$95.00	$4,000
				STRUCTURE TOTAL:	$118,000
				STRUCTURE PLUS ROADWAY SUBTOTAL 1:	$118,000

MINOR ITEMS	UNIT	QUANTITY	UNIT PRICE	TOTAL
Minor Items (10% of Subtotal 1)	LS	1	$11,800.00	$11,800
			SUBTOTAL 2	$11,800

LUMP SUM ITEMS	UNIT	QUANTITY	UNIT PRICE	TOTAL
Clearing & Grubbing (1.5% of Subtotal 1 and 2)	LS	1	$1,947.00	$2,000
M & P of Traffic (0.5% of Subtotal 1 and 2)	LS	1	$649.00	$700
Mobilization (7.5% of Subtotal 1 and 2)	LS	1	$9,735.00	$9,800
Construction Staking (1.0% of Subtotal 1 and 2)	LS	1	$1,298.00	$1,300
			SUBTOTAL 3	$13,800

ENGINEERING PERCENTAGES		TOTAL
Incidentals (10% of Subtotal 1, 2, and 3)	10% INCIDENTALS	$14,400
Contingency (20% of Subtotal 1, 2, and 3)	20% CONTINGENCY	$28,800
	SUBTOTAL 4	$43,200

ESCALATION TO YEAR OF CONSTRUCTION		TOTAL
Say 3% per Year to 2018	SUBTOTAL 5	$17,400
	TOTAL	$204,200
	GRAND TOTAL	**$205,000**

CME	COMPUTATION BY: TEG	DATE: 4/22/15	SHEET: 1	OF: 1
	CHECKED BY: JLS	DATE: 4/27/15	CME PROJECT NO.	
	CLIENT: Charter Oak Bridge Project		CLIENT PROJECT NO.: 063-0703	

ITEM
Bridge # 03244 Alternate 2 - Add Headwall

Alternate 2: Add Headwall

1. Drive tempory sheet piling
2. Remove current stub headwall
3. Construct new headwall
4. Fill with pervious structure backfill
5. Patch the existing culvert and wingwalls

STRUCTURE ITEMS

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
0203000	STRUCTURE EXCAVATION - EARTH (COMPLETE)	CY	250	$23.40	$6,000
0213000	GRAVEL FILL	CY	20	$45.00	$1,000
0216000	PERVIOUS STRUCTURE BACKFILL	CY	140	$45.80	$7,000
0520907	REPLACE JOINT SEAL	LF	80	$52.40	$5,000
0601000	CLASS "A" CONCRETE	CY	80	$546.20	$44,000
0601070	CLASS "S" CONCRETE	CY	10	$9,546.20	$96,000
0602000	DEFORMED STEEL BARS	LB	10,800	$1.20	$13,000
0714020	TEMPORARY SHEET PILING	SF	2,150	$6.20	$14,000
0913014	5' CHAIN LINK FENCE (BRIDGE)	LF	50	$95.00	$5,000
0974001	REMOVAL OF EXISTING MASONRY	CY	5	$238.20	$2,000
				STRUCTURE TOTAL:	$193,000
				STRUCTURE PLUS ROADWAY SUBTOTAL 1:	$193,000

MINOR ITEMS	UNIT	QUANTITY	UNIT PRICE	TOTAL
Minor Items (10% of Subtotal 1)	LS	1	$19,300.00	$19,300
			SUBTOTAL 2	$19,300

LUMP SUM ITEMS	UNIT	QUANTITY	UNIT PRICE	TOTAL
Clearing & Grubbing (1.5% of Subtotal 1 and 2)	LS	1	$3,184.50	$3,200
M & P of Traffic (1.0% of Subtotal 1 and 2)	LS	1	$2,123.00	$2,200
Mobilization (7.5% of Subtotal 1 and 2)	LS	1	$15,922.50	$16,000
Construction Staking (1.0% of Subtotal 1 and 2)	LS	1	$2,123.00	$2,200
			SUBTOTAL 3	$23,600

ENGINEERING PERCENTAGES		TOTAL
Incidentals (10% of Subtotal 1, 2, and 3)	10% INCIDENTALS	$23,600
Contingency (20% of Subtotal 1, 2, and 3)	20% CONTINGENCY	$47,200
	SUBTOTAL 4	$70,800

ESCALATION TO YEAR OF CONSTRUCTION		TOTAL
Say 3% per Year to 2018	SUBTOTAL 5	$28,500
	TOTAL	$335,200
	GRAND TOTAL	**$336,000**

CME	COMPUTATION BY: TEG	DATE: 4/15/15	SHEET: 1	OF: 1
	CHECKED BY: JLS	DATE: 4/27/15	CME PROJECT NO.	
	CLIENT: Charter Oak Bridge Project		CLIENT PROJECT NO.: 063-0703	

ITEM
Bridge # 03244 Alternate 3 - Extend Culvert

Alternate 3: Extend Culvert

1. Lengthen culvert
2. Construct new wingwalls
3. Construct new headwall
4. Fill with pervious structure backfill
5. Patch the existing culvert and wingwalls

STRUCTURE ITEMS

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL
0203000	STRUCTURE EXCAVATION - EARTH (COMPLETE)	CY	60	$23.40	$2,000
0204151	HANDLING WATER	LS	1	$28,140.00	$29,000
0213000	GRAVEL FILL	CY	10	$45.00	$1,000
0216000	PERVIOUS STRUCTURE BACKFILL	CY	20	$45.80	$1,000
0520907	REPLACE JOINT SEAL	LF	80	$52.40	$5,000
0601000	CLASS "A" CONCRETE	CY	20	$546.20	$11,000
0601070	CLASS "S" CONCRETE	CY	10	$9,546.20	$96,000
0601201	CLASS "F" CONCRETE	CY	30	$806.00	$25,000
0602000	DEFORMED STEEL BARS	LB	7,200	$1.20	$9,000
0913014	5' CHAIN LINK FENCE (BRIDGE)	LF	40	$95.00	$4,000
				STRUCTURE TOTAL:	$183,000
				STRUCTURE PLUS ROADWAY SUBTOTAL 1:	$183,000

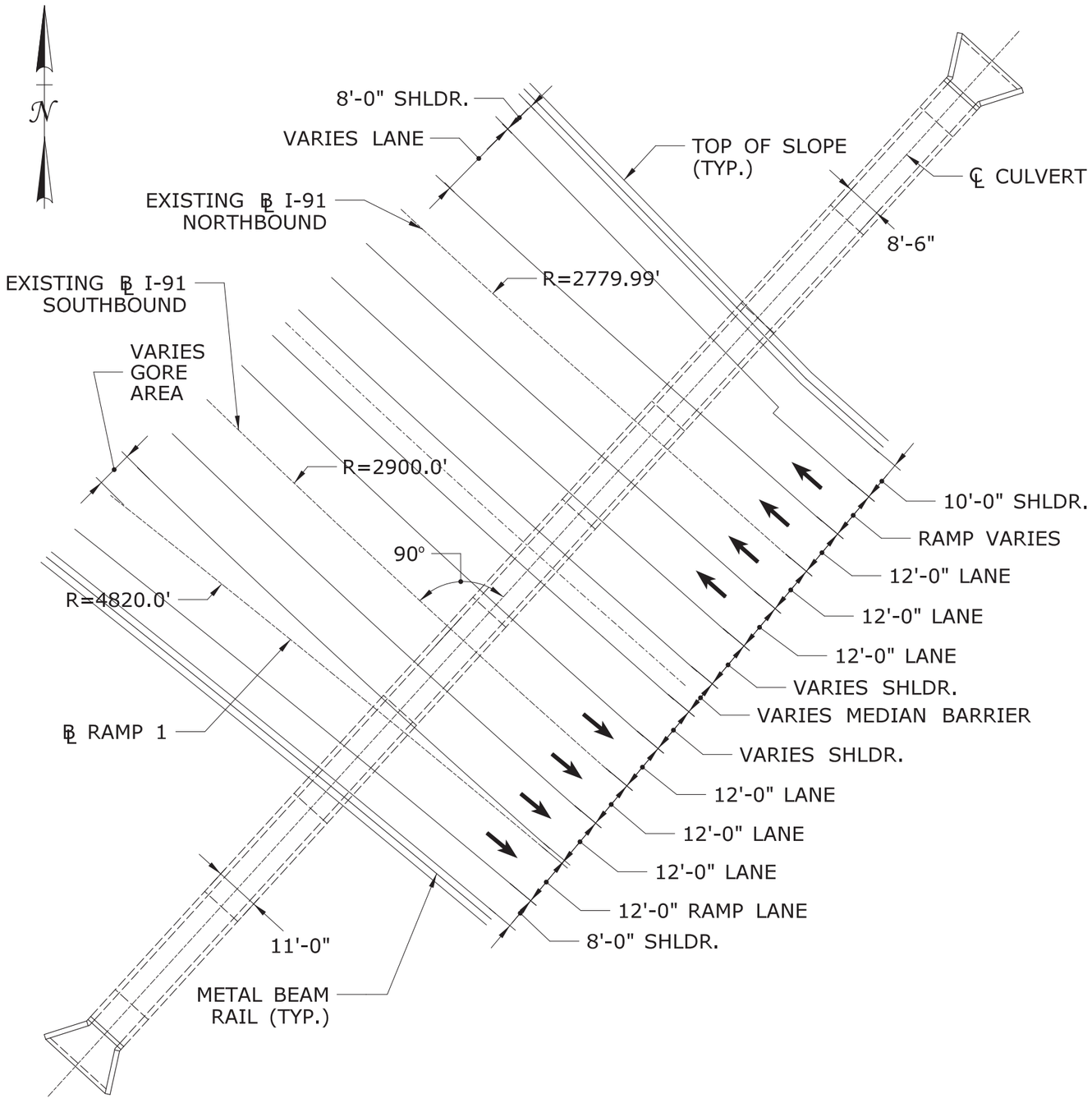
MINOR ITEMS	UNIT	QUANTITY	UNIT PRICE	TOTAL
Minor Items (10% of Subtotal 1)	LS	1	$18,300.00	$18,300
			SUBTOTAL 2	$18,300

LUMP SUM ITEMS	UNIT	QUANTITY	UNIT PRICE	TOTAL
Clearing & Grubbing (1.5% of Subtotal 1 and 2)	LS	1	$3,019.50	$3,100
M & P of Traffic (1.0% of Subtotal 1 and 2)	LS	1	$2,013.00	$2,100
Mobilization (7.5% of Subtotal 1 and 2)	LS	1	$15,097.50	$15,100
Construction Staking (1.0% of Subtotal 1 and 2)	LS	1	$2,013.00	$2,100
			SUBTOTAL 3	$22,400

ENGINEERING PERCENTAGES		TOTAL
Incidentals (10% of Subtotal 1, 2, and 3)	10% INCIDENTALS	$22,400
Contingency (20% of Subtotal 1, 2, and 3)	20% CONTINGENCY	$44,800
	SUBTOTAL 4	$67,200

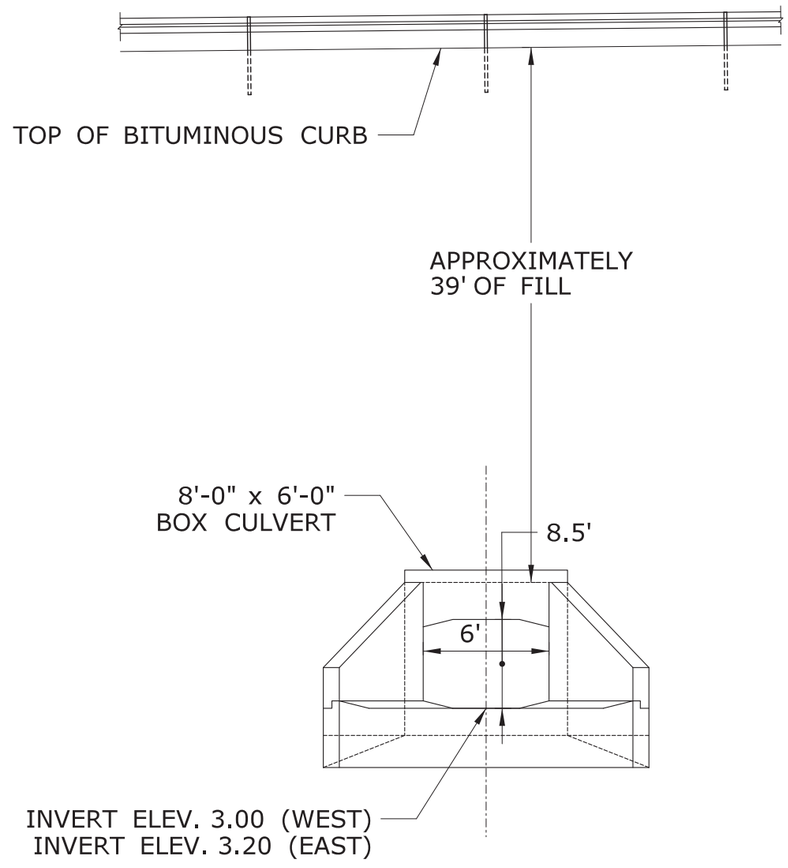
ESCALATION TO YEAR OF CONSTRUCTION		TOTAL
Say 3% per Year to 2018	SUBTOTAL 5	$27,000
	TOTAL	$317,900
	GRAND TOTAL	**$318,000**

Appendix C: Existing Bridge Plans



EXISTING PLAN

SCALE: 1" = 30'



EXISTING EAST ELEVATION

(LOOKING WEST)
SCALE: 1" = 10'

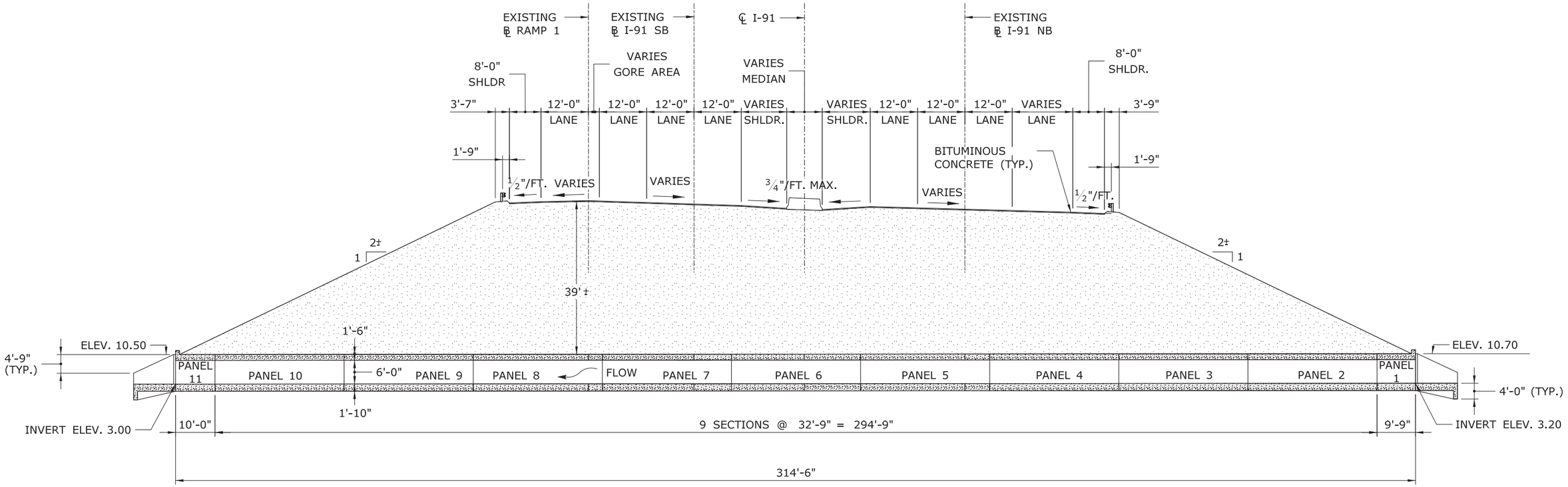
STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

CME
CME ASSOCIATES, INC.
32 Crabtree Lane, Woodstock, CT 06281
333 East River Drive, East Hartford, CT 06108
50 Elm Street, Southbridge, MA 01550
888-275-3227 | www.cmeengineering.com

CITY/TOWN:	BRIDGE NO.:	SCALE:
HARTFORD	03244	AS NOTED

DRAWING TITLE:
EXISTING PLAN AND ELEVATION

STATE PROJECT NO.:	63703
DATE:	12/09/2015
SHEET NO.:	1 OF 2

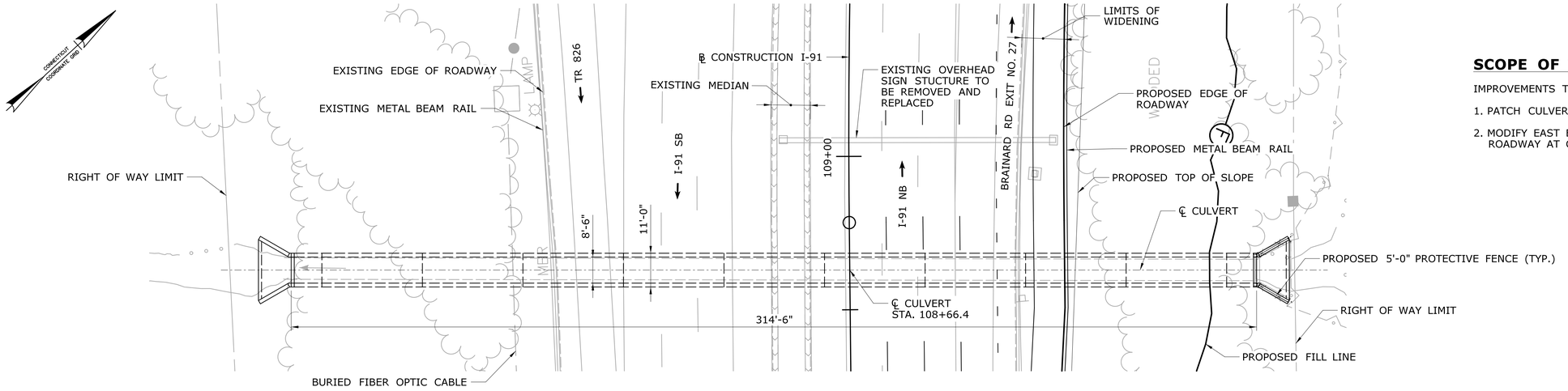


EXISTING SECTION

(LOOKING NORTH)
SCALE: 1" = 25'

	STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION		CME ASSOCIATES, INC. 32 Crabtree Lane, Woodstock, CT 06281 333 East River Drive, East Hartford, CT 06108 50 Elm Street, Southbridge, MA 01550 888-291-3227 | www.cmeengineering.com	DRAWING TITLE: **EXISTING LONGITUDINAL SECTION**	STATE PROJECT NO.: 63703
	CITY/TOWN: HARTFORD	BRIDGE NO.: 03244	SCALE: 1"=25'		DATE: 12/09/2015
					SHEET NO.: 2 OF 2

Appendix D: Proposed Bridge Plans

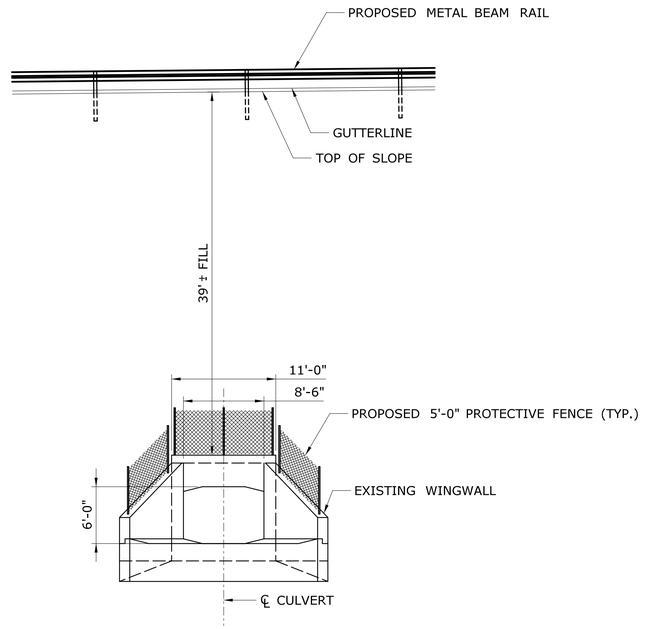


GENERAL PLAN
SCALE: 1" = 20'-0"

SCOPE OF WORK

IMPROVEMENTS TO BRIDGE NO. 03244 INCLUDE THE FOLLOWING:

1. PATCH CULVERT AND WINGWALLS
2. MODIFY EAST EMBANKMENT SLOPE DUE TO WIDENING EXISTING ROADWAY AT CULVERT



EAST ELEVATION
SCALE: 1/8" = 1'-0"

REHABILITATION OF BRIDGE NO. 03244
I-91 OVER DRAINAGE

PRELIMINARY DESIGN REVIEW

REV.	DATE	REVISION DESCRIPTION	SHEET NO.

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

Plotted Date: 2/1/2016

DESIGNER/DRAFTER: JLS
CHECKED BY: BLB
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: ...\SB_MSH_Br03244_S_01_Gen_Plan.dgn

SIGNATURE/ BLOCK:

PROJECT TITLE:
RELOCATION OF I-91 NB INTERCHANGE 29 AND WIDENING OF I-91 NB AND ROUTE 15 NB TO I-84 EB

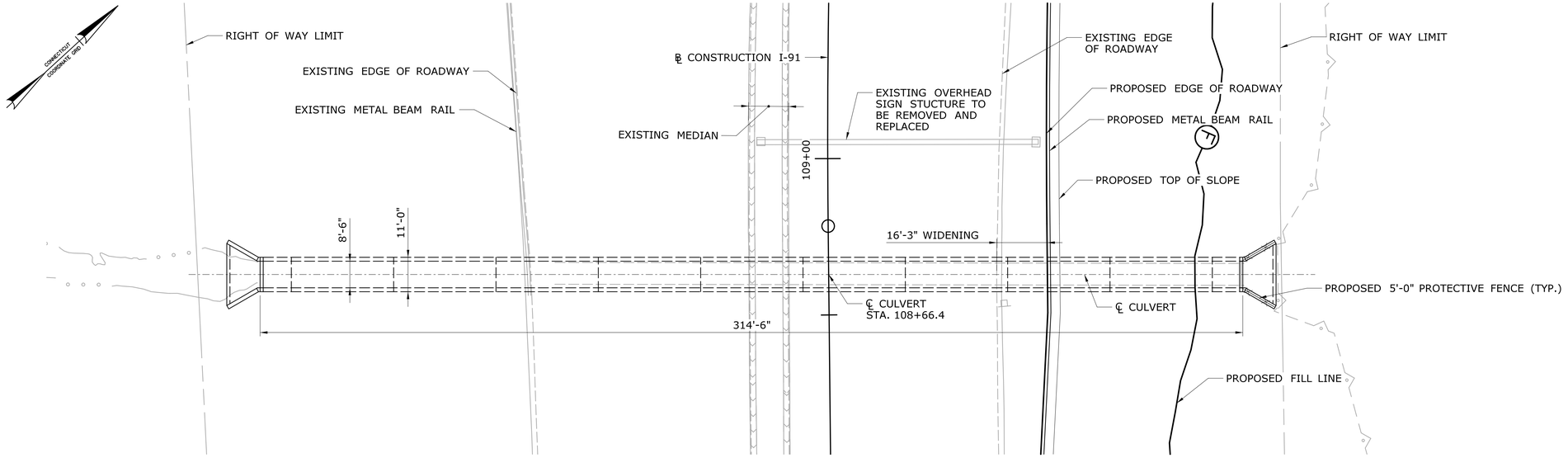
TOWN: CITY OF HARTFORD

DRAWING TITLE: GENERAL PLAN & ELEVATION

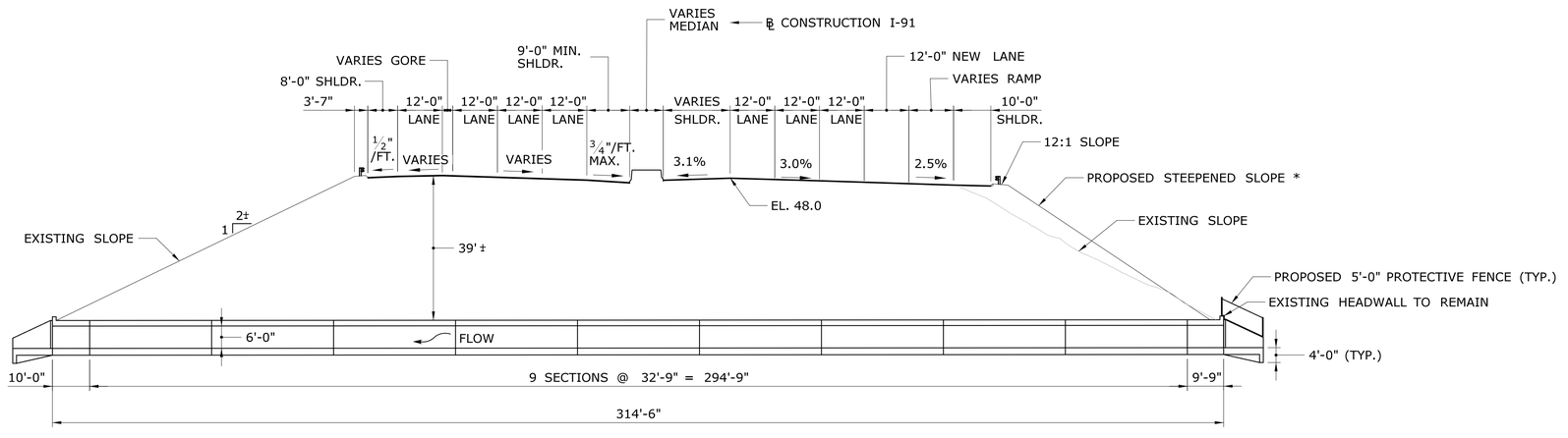
PROJECT NO. 63-703

DRAWING NO.

SHEET NO.



LAYOUT PLAN
SCALE: 1" = 20'-0"



PROPOSED SECTION
(LOOKING NORTH)
SCALE: 1" = 20'-0"

* TO ACCOMPLISH WIDENING THE PROPOSED SLOPE VARIES FROM EXISTING TO 1.5H:1V (MAX.)

REHABILITATION OF BRIDGE NO. 03244
I-91 OVER DRAINAGE

PRELIMINARY DESIGN REVIEW

REV.	DATE	REVISION DESCRIPTION	SHEET NO.

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

Plotted Date: 2/1/2016

DESIGNER/DRAFTER: JLS
CHECKED BY: BLB
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

Filename: ...\SB_MSH_Br03244_S_02_Layout.dgn

SIGNATURE/ BLOCK:

PROJECT TITLE:
RELOCATION OF I-91 NB INTERCHANGE 29 AND WIDENING OF I-91 NB AND ROUTE 15 NB TO I-84 EB

TOWN: **CITY OF HARTFORD**

DRAWING TITLE: **LAYOUT AND TYPICAL CROSS SECTION**

PROJECT NO. **63-703**
DRAWING NO.
SHEET NO.

Appendix E: Concrete Deterioration Quantities

CONCRETE DETERIORATION LOCATIONS

LOCATION	UNIT	QUANTITY
CULVERT	CUBIC FEET	7.3
WINGWALLS	CUBIC FEET	4.8
SUBTOTAL	CUBIC FEET	12.1
TOTAL	CUBIC YARD	0.45
SAY	CUBIC YARD	10

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

CITY/TOWN: HARTFORD
BRIDGE NO.: 03244
SCALE: N.T.S.

CME ASSOCIATES, INC.
32 Crabtree Lane, Woodstock, CT 06281
333 East River Drive, East Hartford, CT 06108
50 Elm Street, Southbridge, MA 01550
888-291-3527 | www.cmeengineering.com

DRAWING TITLE:
CULVERT AND WINGWALL DETERIORATION

STATE PROJECT NO.: 63703
DATE: 6/4/2015
SHEET NO.: 1 OF 1

Appendix F: ConnDOT Inspection and Maintenance Reports

STRUCTURE NO. 03244

I-91 & TR 826 SB

over

DRAINAGE

HARTFORD

Routine Inspection

on

7/11/2013

Inspected by Team 5

for Area 6

TEAM:	Forwarded to TE3	Dennis Talmont	Date	8/6/2013
TE3:	Reviewed by TE3	KK	Date	8/12/13
	BMM Required	N		
	Town Bridge	N		
	Rating <= 5 (Items 58,59,60 or 62)	N		
	Rating Change 2 or More Values	N		
	Forwarded to Supervisor	SK	Date	8/12/13
	Forwarded to "To Be Copied Drawer"	☐	Date	
	Date BRI-19 Entered	8/12/13		
SUPERVISOR:	Reviewed by Supervisor	SK	Date	8/13/13
SUPPORT:	Date Copies Made	8-17-13	BMM No	
	Scanned By:	LA	Date Scanned	8-17-13
			PDF Box No	

NBI: No

State of Connecticut
Department of Transportation
Bureau of Engineering and Construction

Inspection Report Transmittal Form
Form BRI-27, Rev. 8/09

Structure No.	03244	**Town**	Hartford
Inspection Date	7/11/2013	**Inspectors**	Team 5

TABLE OF CONTENTS

Loose Forms (not bound in report)

			Number of Sheets Enclosed
Maintenance Memo			0
Flagging Memos			0
PONTIS Element Data Collection Form			1
Plan Sheets	Already on File	☐	0

Bound Report Pages

Title Cover Sheet		1
Table of Contents		1
Executive Summary		0
Field Notes		0
Calculations:	Load Rating Evaluation	0
	Quantities & Cost Estimate	0
Photo Sheets		3
Photo Images		6

Forms

BRI-18 Bridge Inspection Report Form	6
BRI-19 Highway Bridge Inventory Form	2

Comments:
Map - 1

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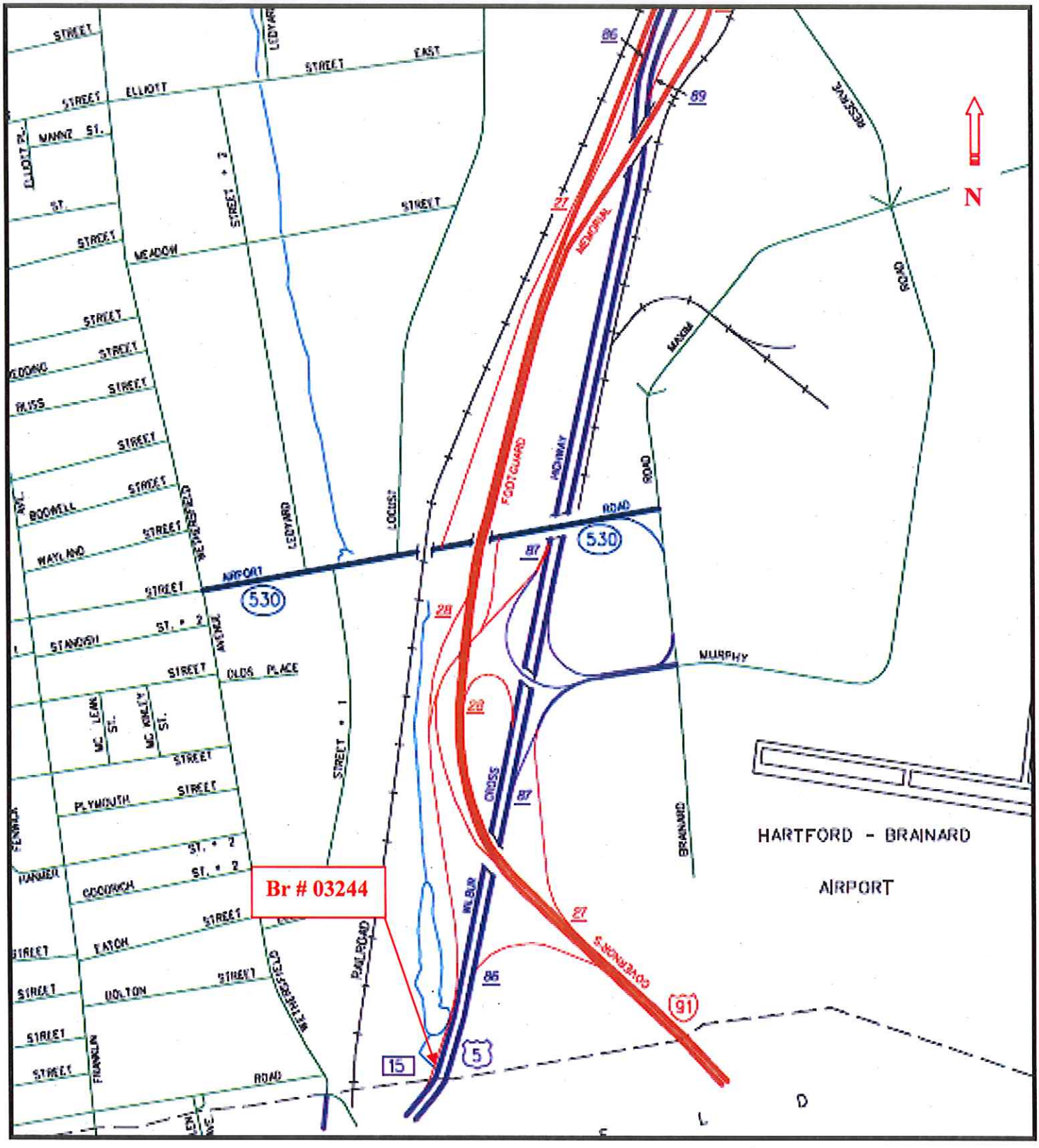
Bridge Number: 03244, Hartford, I – 91 and TR 826 Southbound over Drainage
Location: 0.1 Mile North of Wethersfield town Line, Mile Point: 35.53
Inventory Direction: North



Bridge Number **03244**

Inspected By: E. Finn & D. Talmont

Sufficiency Rating 98.00 (98.0)
Previous Inspection Date 7/18/2011

BS&E Received ☐ Data Entry By: Krys Kowalski
Copies Made ☐ Data Entry Date: 8/13/13

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BRIDGE SAFETY & EVALUATION

STRUCTURE EVALUATION

SHEET 1 OF 2 FORM BRI-19 REV 10/00

SHEET 4 OF 15

90) Inspection Date	Inspection Team	91) Frequency	Class:
07/11/13	5	24	01
Indepth Insp	Deck Survey	Access	Flagman
		0	

CRITICAL FEATURE INSPECTIONS

	Type	Frequency	Team	Date
Fracture:				
Uwater:				
Special:				

RED FLAG ☐

IDENTIFICATION

Bridge Name
Town Name HARTFORD Town Code 37070
5) Inventory Route:
A) Record Type 1 D) Route Number 00091
B) Signing Prefix 1 Interstate High E) Directional Suffix 3 South
C) Level of Service 1 Mainline
6) Feature Intersected DRAINAGE
7) Facility Carried: I-91 & TR 826 SB
9) Location 0.1 MI N WETHERSFIELD TL
11) Milepoint 35.50 Miles 035.530
16) Latitude 41deg 43 min 48.00 sec
17) Longitude 72deg 39 min 36.00 sec
98) Border Bridge:
A) State Code B) Percent Responsibility %
C) Border Town Name
99) Border Bridge Structure No

STRUCTURE TYPE AND MATERIAL

43) Structure Type, Main:
A) Material 1 Concrete B) Design Type 19 Culvert (includes fram
44) Structure Type, Approach:
A) Material 0 Other B) Design Type 0 Other
45) Number of Spans, Main Unit 1
46) Number of Approach Spans 0
107) Deck Structure Type N Not Applicable
108) Wearing Surface/Protective System:
A) Type of Wearing Surface N Not Applicable
B) Type of Membrane N Not Applicable
C) Type of Deck Protection N Not Applicable

AGE AND SERVICE

27) Year Built 1964 106) Year Reconstructed
42) Type of Service:
A) On 1 Highway B) Under 5 WATERWAY
28) Number of Lanes:
A) On 7 B) Under
29) Average Daily Traffic 140500 Half ADT?: No
109) Percent Truck 9%
30) Year of ADT 2008 2012
19) Bypass, Detour Length miles

GEOMETRIC DATA

48) Length of Max Span 9ft
49) Structure Length 9ft
50) Curb or Sidewalk Widths:
A) Left 0.0ft B) Right 0.0ft
51) Brg Rdwy width,curb-curb 0.0ft
52) Deck Width, Out-Out 0.0ft
32) Approach Roadway Width 148ft
33) Bridge Median 0 No Median
Deck Area 2880 sqft
34) Skew Angle 0deg
35) Structure Flared 0
10)Inv. Rte. Min. Vert Clearance 99ft 99in
47) Log Inv. Rte. Total Horiz Clr.: 50.7ft
47) RLog Inv. Rte. Total Horiz. Clr.: ft
53) Min Vert Clearance Over Bridge 99ft 99in
54) Min Vert Under Clearance N Ref 0ft 0in Ref
55) Min Lat Under Clearance on Right N Ref 99.9ft Ref
56) Min Lat Under Clearance on Left 0.0ft

BRIDGE COMMENTS

Br#03244 and #02165 are two culverts 0.2 miles apart along the service road that should be inspected together. NTS 6/19/2012.

STRUCTURE EVALUATION

SHEET 2 OF 2 FORM BRI-19 REV 10/00

SHEET 5 OF 15

Bridge Number	03244
NBIS Length	
Town Name	HARTFORD
No 9	
Facility Carried	I-91 & TR 826 SB
Feature Crossed	DRAINAGE

Inspected By: E. Finn & D. Talmont

CLASSIFICATION

112) NBIS Bridge Length	No	
104) Highway System	1	On System
26) Functional Class	11	Urban Principal Arterial - Interstate
100) Defense Highway	1	Route is on a Interstate STRAHNET Route
101) Parallel Structure	N	No parallel structure exists
102) Direction of Traffic	2	2-way traffic
103) Temporary Structure		
110) Designated National Network	1	On national network
20) Toll	3	On Free Road
21) Maintain	1	State Highway Agency
22) Owner	1	State Highway Agency
Report Class	S	STATE
37) Historical Significance	5	Bridge is not eligible for National Register

WATERWAY

DrainageBasinCode	4099	
38) Navigation Control	0	No navigation control on waterway
39) Navigation Vert Clr.	0	40) Navigation Horiz Clr. 0
116) Vert-Lift Brg Nav Min		
111) Pier Abutment Protection		

PROPOSED IMPROVEMENTS

75A) Type of Work Proposed		
75B) Work Done By		
76) Length of Struct. Improvement		ft
94) Bridge Improvement Cost	$	
95) Roadway Improvement Cost	$	
96) Total Project Cost	$	
97) Year of Improvement Cost Est.		
114) Future ADT		115) Year Future ADT
List No.	Project No.	Advertised

POSTED SIGNS & UTILITIES

Other Posted Signs 1					
Other Posted Signs 2					
Actual P.L. Single Unit Truck	tons		Actual P.L. 4Axle Truck	tons	
Rec. P.L. Single Unit Truck	tons		Rec. P.L. 4Axle Truck	tons	
Actual P.L. Semi-TrailerTruck	tons		Actual P.L. 3S2 Truck	tons	
Rec. P.L. Semi-TrailerTruck	tons		Rec. P.L. 3S2 Truck	tons	
Rec. P.L. All Vehicles	tons		Actual P.L. All Vehicles	tons	
Posted Vert Clearance On Bridge	ft	in		ft	In
Posted Vert UnderClearance	ft	in		ft	In
Posted Speed Limit	mph				mph
Utility					

LOAD RATING AND POSTING

31) Design Load	5	Evaluation Code	J
63) Operating Rating Type	5	Year of Evaluation	2000
64) Operating Rating	99.0	70) Bridge Posting	5
65) Inventory Rating Type	5	41) Structure Status	A
66) Inventory Rating	99.0		

CONDITION

	Rating	By
58) Deck	N	DT
59) Superstructure	N	DT
60) Substructure	N	DT
61) Channel & Chan. Protection	7	DT
62) Culverts	7	DT

APPRAISALS

	Rating	By
67) Structure Evaluation	7	KK
68) Deck Geometry	N	
69) Under Clear Vert & Horiz	N	
71) Waterway Adequacy	7	EF
72) Approach Rdwy Alignment	8	EF
113) Scour Critical	8	

Items 58 Thru 72 Checked By: DLT 8-9-13

36) Traffic Safety Features:

A) Bridge Railings	N	N
B) Transitions	N	N
C) Approach Guardrail	N	N
D) Approach Guardrail End	N	N

OTHER FEATURES

Fence Required	No	Barrel Ladder	No
Fence Present	No	Stand Pipes	No
Fence Height	0.0 ft	Cat Walks	No
Fence Type		Movable Inspection System	No
Fence Material		Loose Concrete Checked?	No
Fence Top Type			

INSPECTION COMMENTS

Proposed Next Indepth Insp Year	9999
Senior	Ned Statchen
Supervisor	Theodore Lapierr

REVIEWED BY: Kris Kowalski Date 8/13/13

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Connecticut Department of Transportation

Bridge Inspection Report BRI-18

Bridge #: 03244 **Inspection Date: 07/11/2013**

Inspection Type:	Routine	**Previous Inspection Date:**	7/18/2011	**Snooper Required:**	No
Inspection Performed By:	Team 5	**Feature Carried:**	I-91 & TR 826 SB	**Snooper Used:**	No
Town:	HARTFORD	**Feature Intersected:**	DRAINAGE	**Year Built:**	1964
Location:	0.1 MI N WETHERSFIELD TL	**Main Design:**	Culvert (includes frame culverts)	**Year Rebuilt:**	-
Main Material:	Concrete				

Visits

Visit Date:	Temp:	Start Time:	End Time:
7/11/2013	80	10:00:00 AM	10:30:00 AM
7/25/2013	61	12:55:00 PM	1:30:00 PM

Inspectors:

Inspector:	Task:
D. Talmont	Inspector 3
E. Finn	Lead Inspector

DECK: - **Overall Rating:** P

	Rating	
OVERLAY:	6	Bituminous overlay. 25' +/ - of bituminous and ballast over structure. Transverse and longitudinal cracks. Traffic worn in wheel paths. Rutting along longitudinal paving seams with some bituminous concrete patches and adjacent short cracking along seams. A skim coat appears to have been added in the southbound direction in the center & left travel lanes.
DECK-STR. CONDITION:	N	-
CURBS:	N	-
MEDIAN:	7	Concrete Jersey barrier. Scrapes, small surface spalls,vegetation growth on top.
SIDEWALKS:	N	-
PARAPET:	N	-
RAILING:	N	-
PAINT:	N	-
FENCE:	N	-
DRAINS:	N	-

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LIGHTING STANDARD:	N	-
UTILITIES TYPE/SIZE:	N	-
CONSTR JOINTS:	N	-
EXPANSION JOINTS:	N	-

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59. SUPERSTRUCTURE:	-	**Overall Rating:**	N

60. SUBSTRUCTURE:	-	**Overall Rating:**	N

Rating

61. CHANNEL & CHANNEL PROTECTION:	-	**Overall Rating:** 7

Rating

CHANNEL SCOUR:	8	Stagnant(smelly & dirty) water.
EMBANKMENT EROSION:	8	-
DEBRIS:	7	Encroachment at east outend.
VEGETATION:	6	Heavy vegetation growth along channel embankments with heavy vegation growth at both ends overhanging headwalls.
CHANNEL CHANGE:	N	-
FENDER SYSTEM:	N	-
SPUR, DIKES & JETTIES:	N	-
RIP RAP:	N	-

62. CULVERTS & RETAINING WALL:	-	**Overall Rating:** 7

Rating

BARREL:	-	-
CONCRETE:	7	Roof - Light map hairline. Random popouts from shallow steel western and eastern ends of box. Walls - Vertical hairline cracks. Light to medium scale at waterline.

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		Some units show minor misalignment. Approximately 22 inches of water in box.
STEEL:	N	-
TIMBER:	N	-
HEADWALL:	7	Popouts from shallow steel. Vines overhanging inlet and outlet, limited visability.
CUTOFF WALL:	N	Not visible.
DEBRIS:	7	Silt built up in middle of box, halfway through approximately 10 inches +/- deep. Light brush & a 6 foot log in box.
RETAINING WALL STEM:	7	Heavy scale at waterline of northwest wing. All others show light scale.
FOOTING:	N	-

65. APPROACH CONDITION - **Overall Rating:** 6

	Rating	
APPROACH SLAB:	N	-
RELIEF JOINTS:	N	-
APPROACH GUIDE RAIL:	7	Metal Beam Rail on weak posts. Collision damage at southeast: (1) section of rail dented & (1) weak post disconnected.
APPROACH PAVEMENT:	6	Bituminous Concrete. Same condition as overlay above.
APPROACH EMBANKMENT:	7	Heavy vegetation.

TRAFFIC SAFETY FEATURES

	Rating	
BRIDGE RAILINGS:	Last Inspection: N Current: -	-
TRANSITIONS:	Last Inspection: N Current: -	-

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APPROACH GUARDRAILS:	Last Inspection: N Current: -	-
APPR. GUARDRAIL ENDS:	Last Inspection: N Current: -	-

66. LOAD POSTING

	- Posted Loading -	
SINGLE UNIT (TONS):	Last Inspection: - Current: -	-
SEMI TRAILER (TONS):	Last Inspection: - Current: -	-
4 AXLE (TONS):	Last Inspection: - Current: -	-
3S2 (TONS):	Last Inspection: - Current: -	-
ADVANCE WARNING (Y/N):	N	-
LEGIBILITY:	N	-
VISIBILITY/LOCATION:	N	-

67. MISCELLANEOUS

	Rating	
MIN. VERT. UNDERCLEARANCE:	Last Inspection: 0' 0" Current: -' -"	-
POSTED CLR. UNDER BRIDGE:	Last Inspection: -' -" Current: -' -"	-
POSTED CLR. ON BRIDGE:	Last Inspection: -' -" Current: -' -"	-
ADVANCED WARNING (YES/NO):	No	-
SPEED LIMIT (IF ANY):	Last Inspection:	-

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- Current: -	
CHARACTER OF TRAFIC:	Heavy - Mixed.
ADDITIONAL NOTES:	Access to box on pump station road.
ADDITIONAL COMMENTS:	Use bug spray.

Inspectors' Signatures:

1) _____ Date: 8/6/13

2) _____ Date: 8/6/2013

3) _____ Date: ----/----/-----

4) _____ Date: ----/----/-----

P.E. Signature: _____ Date: ----/----/-----

P.E. #: _____ Date: ----/----/-----

Reviewed by: _____ Date: ----/----/-----

conndot

Bridge No.	**03244**	**Inspected by:**	**ERIC FINN**
Town:	**HARTFORD**	**Inspected by:**	**DENNIS TALMONT**
Feature Carried:	**I 91 AND TR 826 SOUTHBOUND**	**Date Inspected:**	**7/11/2013**
Feature Crossed:	**DRAINAGE**	**Project No.:**	

Photo # 1 : General View, Looking southbound from the north approach.

Photo # 2 : General View, Looking northbound from the south approach.

Bridge No.	**03244**	**Inspected by:**	**ERIC FINN**
Town:	**HARTFORD**	**Inspected by:**	**DENNIS TALMONT**
Feature Carried:	**I 91 AND TR 826 SOUTHBOUND**	**Date Inspected:**	**7/11/2013**
Feature Crossed:	**DRAINAGE**	**Project No.:**	

Photo # 3 : General View, Interior.

Photo # 4 : General View, Inlet elevation. (West) Note Heavy vegetation.

Bridge No.	**03244**	**Inspected by:**	**ERIC FINN**
Town:	**HARTFORD**	**Inspected by:**	**DENNIS TALMONT**
Feature Carried:	**I 91 AND TR 826 SOUTHBOUND**	**Date Inspected:**	**7/11/2013**
Feature Crossed:	**DRAINAGE**	**Project No.:**	

Photo # 5 : General View, Looking upstream from the inlet.

Photo # 6 : General View, Outlet elevation. (East) Note Heavy vegetation.

Your Agency Name

Your Office Name
Your Department Name

Structure Inventory and Appraisal Sheet (English Units)

Bridge Key: 03244 Agency ID: 03244 SR: 83.0 SD/FO:

IDENTIFICATION

State 1:	09 Connecticut	Struc Num 8:	03244
Facility Carried 7:	I-91 & TR 826 SB	Location 9:	.10MI(N)CLARKDIKE SVCE RD
Rte.(On/Under) 5A:	Route On Structure	Rte. Signing Prefix 5B:	1 Interstate Hwy
Level of Service 5C:	1 Mainline	Route Number 5D:	00091
Directional Suffix 5E:	3 South	% Responsibility:	0.00
SHD District 2:	01	County Code 3:	Hartford
Place Code 4:	HARTFORD	Mile Post 11:	35.493 mi
Feature Intersected 6:	DRAINAGE		
Latitude 16:	41° 43' 48"	Longitude 17	072° 39' 36"
Border Bridge Code 98	Unknown (P)		
Border Bridge Number 99	NA		

STRUCTURE TYPE AND MATERIALS

Number of Approach Spans 46	0	Number of Spans Main Unit 45:	1
1 Concrete		19 Culvert	
Deck Type 107:	N N/A (NBI)		
Wearing Surface 108A:	N N/A (no deck (NBI))		
Membrane 108B:	N N/A (no deck (NBI))		
Deck protection 108C	N N/A (no deck (NBI))		

AGE AND SERVICE

Year Built 27:	1964	Year Reconstructed 106:	-1		
Type of Service on 42A	1 Highway				
Type of Service under 42B	5 Waterway				
Lanes on 28A:	7	Lanes under 28B:	0	Detour Length 19:	0.0 mi
ADT 29:	128,500	Truck ADT 109:	9%	Year of ADT 30:	2012

GEOMETRIC DATA

Length Max Span 48:	8.66 ft	Structure Length 49:	8.66 ft
Curb/Sdwlk Width L 50A	0.00 ft	Curb/Sidewalk Width R 50B	0.00 ft
Width Curb to Curb 51:	0.00 ft	Width Out to Out 52:	0.00 ft
Approach Roadway width 32: (w/ shoulders)	147.97 ft	Median 33:	0 No median
Deck Area:	0.00 sq. ft		
Skew 34:	0.00°	Structure Flared 35	0 No flare
Vertical Clearance 10	99.90 ft	Horizontal Clearance 47:	50.85 ft
Minimum Vertical Clearance Over Bridge 53:		328.05 ft	
Minimum Vertical Underclearance Reference 54A		N Feature not hwy or RR	
Minimum Vertical Underclearance 54B:		0.00 ft	
Minimum Lateral Underclearance Reference R 55A:		N Feature not hwy or RR	
Minimum Lateral Underclearance R 55:		327.76 ft	
Minimum Lateral Underclearance L 56:		0.00 ft	

INSPECTION

Frequency 91:	48 months	Inspection Date 90:	7/11/2013	Next Inspection:	7/26/2017
FC Frequency 92A:	NA	FC Inspection Date 93A:	NA	Next FC Inspection:	NA
UW Frequency 92B:	NA	UW Inspection Date 93B:	NA	Next UW Inspection	NA
SI Frequency 92C:	NA	SI Date 93C:	NA	Next SI:	NA
Element Frequency:	24 months	Element Insp. Date:	11/5/2004	Next Elem. Insp.:	7/26/2015

CLASSIFICATION

Defense Highway 100:	1 STRAHNET hwy	Parallel Structure 101:	No || bridge exists
Direction of Traffic 102:	2 2-way traffic	Temporary Structure 103:	Unknown (NBI)
Highway System 104:	1 On the NHS	NBIS Length 112:	Too Short
Toll Facility 20:	3 On free road	Functional Class 26:	11 Urban Interstate
Defense Hwy 110:	1 STRAHNET hwy	Historical Significance 37	5 Not eligible for NRHP
Owner 22:	01 State Highway Agency		
Custodian 21:	01 State Highway Agency		

CONDITION

Deck 58:	N N/A (NBI)	Super 59:	N N/A (NBI)	Sub 60:	N N/A (NBI)
Culvert 62:	7 Minor Deterioration	Channel/Channel Protection 61:		7 Minor Damage	

LOAD RATING AND POSTING

Inventory Rating Method 65:	5 No rating	Operating Rating Method 63:	5 No rating
Inventory Rating 66:	HS54.5	Operating Rating 64:	HS54.5
Design Load 31:	5 MS 18 (HS 20)	Posting 70:	5 At/Above Legal Loads
Posting Status 41:	A Open, no restriction		

APPRAISAL

Bridge Rail 36A:	N N/A or not required	Approach Rail 36C:	N N/A or not required
Transition 36B:	N N/A or not required	Approach Rail Ends 36D:	N N/A or not required
Str Evaluation 67:	7 Above Min Criteria	Deck Geometry 68:	N Not applicable (NBI)
Underclearance, Vertical and Horizontal 69:		N Not applicable (NBI)	
Waterway Adequacy 71:	7 Above Minimum	Approach Alignment 72:	8 Equal Desirable Crit
Scour Critical 113:	8 Stable Above Footing		

PROPOSED IMPROVEMENTS

Bridge Cost 94:	$1,000	Type of Work 75:	38 Other Structural
Roadway Cost 95:	$1,000	Length of Improvement 76	0.3 ft
Total Cost 96:	$2,000	Future ADT 114:	55,600
Year of Cost Estimate 97	2000	Year of Future ADT 115:	2019

NAVIGATION DATA

Navigation Control 38	Permit Not Required		
Vertical Clearance 39	0.0 ft	Horizontal Clearance 40:	0.0 ft
Pier Protection 111:	Unknown (NBI)	Lift Bridge Vertical Clearance 116	

ELEMENT CONDITION STATE DATA

Str Unit	Elm/Env	Description	Units	Total Qty	% in 1	Qty. St. 1	% in 2	Qty. St. 2	% in 3	Qty. St. 3	% in 4	Qty. St. 4	% in 5	Qty. St. 5
UNIT0	212/3	Reinforced Conc wing	(LF)	144	100%	144	0%	0	0%	0	0%	0	0%	0
UNIT0	241/3	Concrete Culvert	(LF)	315	98%	309	2%	6	0%	0	0%	0	0%	0

www.cmeengineering.com

☒ Original ☐ Copy ☐ Record

CME Project No. 63-703